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A Handbook on Scrap Futures Markets and Futures Trading

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Market prices for secondary materials are generally characterized by a high degree of variability and uncertainty. Futures markets may be an effective mechanism for stabilizing these prices, and encouraging recovery of secondary materials from solid waste. The desirability and feasibility of implementing futures markets for ferrous scrap and wastepaper were investigated and the results presented at a Symposium held in New Orleans, Louisiana on May 14-15, 1979. A handbook was prepared and distributed to the Symposium participants as a basis for the discussions. The essentials of the handbook and a summary of the comments by those attending are contained in this report.

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A HANDBOOK ON SCRAP FUTURES MARKETS AND FUTURES TRADING

by

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Washington, DC 20036

Grant No. R804309-01

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FOREWORD

The Environmental Protection Agency was created because of increasing public and government concern about the dangers of pollution to the health and welfare of the American people. Noxious air, foul water, and spoiled land are tragic testimony to the deterioration of our natural environment. The complexity of that environment and the interplay between its components require a concentrated and integrated attack on the problem.

Research and development is that necessary first step in problem solution and it involves defining the problem, measuring its impact, and searching for solutions. The Municipal Environmental Research Laboratory develops new and improved technology and systems for the prevention, treatment, and management of wastewater and solid and hazardous waste pollutant discharges from municipal and community sources, for the preservation and treatment of public drinking water supplies, and to minimize the adverse economic, social, health, and aesthetic effects of pollution. This publication is one of the products of that research; a most vital communications link between the researcher and the user community.

This handbook resulted from an earlier EPA research effort directed at examining the feasibility and desirability of establishing scrap futures markets to increase resource recovery from solid waste. The handbook was used at a symposium on scrap futures trading held at New Orleans, Louisiana on May 14-15, 1979. A summary of the comments made and conclusions reached at that symposium are included in this report. It will be useful information to persons engaged in buying and selling secondary materials, and to policy makers concerned with managing solid waste and conserving national resources.

Francis T. Mayo, Director
Municipal Environmental Research
Laboratory

ABSTRACT

The feasibility and desirability of futures trading in wastepaper and ferrous scrap was the subject of a symposium held on May 14th and 15th, 1979. The Scrap Futures Symposium was intended to provide a forum for industry and commodity exchange interaction on the potential merits of futures trading in scrap materials. This report incorporates a summary of the discussions at that Symposium with an elementary introduction to the mechanics of futures markets and futures trading.

The risk management and financial functions of futures markets are argued to be of benefit to the commerical users of those markets; the consumers and suppliers of wastepaper and ferrous scrap. Before futures trading can be initiated, the standard marketing practices and procedures in those industries must be duplicated in the futures markets. In addition, a standard grade of scrap must be chosen for delivery on the futures contract. Most of the industry participants at the Symposium felt that these requirements could be met and that a futures market could be an important addition to their normal market transactions.

As a result, in part of the Symposium and earlier reports, a New York commodity exchange is designing a model ferrous scrap contract for industry review. Further presentations on the mechanics of futures trading must be provided to members of the wastepaper industry before more specific discussions can take place.

This report was submitted in fulfillment of Grant No. R804309-01 by the Environmental Law Institute under sponsorship of the U.S. Environmental Protection Agency. This report covers the period September 15, 1978 to June 15, 1979. The work was completed as of June 15, 1979.

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SECTION 1

INTRODUCTION

The idea of futures trading in scrap materials is neither novel or untried. In 1955 futures trading in ferrous scrap was initiated on a Chicago commodity exchange, only to be withdrawn after one year. The concept was reviewed in recent years by the Department of Commerce in a series of presentations to ferrous scrap buyers and sellers on the mechanics of futures trading. Last year, a New York commodity exchange organized a ferrous scrap futures advisory committee, with the task of investigating the potential for renewed futures trading in ferrous scrap. More recently, after attending a symposium on the subject, the same exchange decided to develop a model ferrous scrap futures contract and propose it for trading.

The recurring interest in scrap futures trading has resulted from several conflicting motivations. The 1955 scrap futures contract was introduced at a time when the exchange was trying to generate trading interest. The Commerce Department presentations followed in the wake of the commodity shortages of 1973-74, in an apparent attempt to initiate a futures market in ferrous scrap as a forecasting tool. The current work of the Environmental Law Institute in scrap futures originated in an interest in futures markets as a device for stabilizing secondary materials markets and thus, perhaps, stimulating resource recovery.

Until recently, the scrap processing and consuming industry's interest in futures trading has been minimal. Past discussions have rarely focused directly on the needs and concerns of scrap dealers or consumers. Many industry members view futures markets as outside their normal business transactions, offering few benefits to anyone but the speculators who take advantage of other market traders. Given this lack of understanding of futures markets, it is little wonder that broad industry support for the concept is just beginning to materialize.

The purpose of this report is to provide a foundation for informed discussion and debate on the merits of and potential for organized futures markets in wastepaper and ferrous scrap. To this end, it is our intention that the report serve as a

primer on the structure of futures markets and the mechanics of futures trading, with emphasis on the economic benefits to industrial traders in the markets. Particular attention is paid to those characteristics of futures markets that may have a bearing on whether wastepaper and ferrous scrap can be successfully traded on a futures market.

In addition, incorporated into this discussion are relevant conclusions and comments made at a recent symposium on scrap futures trading. The desirability and feasibility of organized futures markets in ferrous scrap and wastepaper was the topic of a symposium sponsored by the U.S. Environmental Protection Agency and the Environmental Law Institute on May 14th and 15th 1979.* The symposium provided a forum for preliminary industry discussion on the potential merits and barriers to futures trading in wastepaper and ferrous scrap. Commodity exchange officials and industry representatives spoke to audience of wastepaper and ferrous scrap consumers and dealer/processors on a number of different topics including the role of the commodity exchange in futures markets and the uses of futures markets for buyers and sellers.**

The design and implementation of a futures contract in wastepaper or ferrous scrap is a process requiring close interaction and cooperation among a commodity exchange and members of those industries. The purpose of the EPA grant under which this work was performed was to provide the initial step in this process. In a sense then by this report, presenting a mix of theoretical and practical issues that draw upon a larger research report prepared for EPA by the Environmental Law Institute and remarks made during the Scrap Futures Symposium, summarizes the progress which has been achieved.***

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*From this point on the Scrap Futures Symposium will be refered to as the "Symposium".

** The Symposium speakers and the participants are listed in the Appendix.

***Anderson, R.C. and R.C. Dower, An Analysis of Scrap Futures Markets for Stimulating Resource Recovery, prepared for the Solid and Hazardous Waste Research Division of the U.S. E.P.A., EPA-600/8-78-018.

SECTION 2

SUMMARY AND CONCLUSIONS

The purpose of this report was to identify some of the important features and uses of futures markets and to outline some of the practical considerations that must be evaluated before such markets can be established in wastepaper or ferrous scrap. The risk management and financial functions of futures markets can provide large benefits to commerical users of the markets with little or no costs imposed on the industry itself. This point was well taken by those attending the Symposium, some of the discussions from which are summarized in this report. Although there were varying degrees of sophistication concerning futures markets among those participating in the Symposium, all but a few regarded futures trading in wastepaper or ferrous scrap as a potentially useful adjunct to their normal business transactions.

This is not to say that futures trading in ferrous scrap or wastepaper will become a reality in the near future. Several barriers, such as industry education and delineation of a standard contract for trading must be overcome before futures trading in these materials can be initiated. The Scrap Futures Symposium and this report are only the beginnings of this process. For wastepaper, a greater effort to demonstrate the usefulness of futures trading and the mechanics of futures trading to industry members must be made before a model contract can be devised or before a commodity exchange will take a strong interest. All of the wastepaper consumers and suppliers represented at the Symposium remarked that before more specific discussions on a wastepaper futures contract could take place, they would need further presentations on how futures markets work. With the support of an industry trade association and several of the Symposium participants, plans for such presentations are under way.

In the case of ferrous scrap, the deliberations are much further along. Based, in part, on the comments generated d ·ing the Symposium, and earlier reports on futures trading in ferrous scrap, Comex in New York has decided to develop a model ferrous scrap futures contract. The model will be presented to the Board of Comex and interested industry parties. If the reactions

are favorable, the model contract, or a modified version of the contract depending on the industry comments, may be introduced for trading.

SECTION 3

WHAT ARE FUTURES MARKETS?

Much of the mystery and distrust surrounding futures markets stems from attempts to distinguish futures trading from other sorts of market transactions. Strictly speaking, futures markets are organized market places for trading in future commitments, or futures contracts, for a commodity. While similar in concept to forward contracting, a common practice that enables both sides of a market to plan ahead of the current market period and to make good use of the resources under their control by smoothing out irregularities in demand and supply, futures markets are unique in several respects.

First, futures trading takes place on an organized exchange. Futures contracts in a commodity are bought and sold in one well-defined trading area or "pit" of a commodity exchange trading floor. In fact, trading outside this area is prohibited by law. Second, the futures contracts are standardized with respect to the quantity, quality, delivery terms, and so forth. The specifications of a futures contract are extremely detailed, covering the purity of the commodity to be delivered, the method of shipment, and the terms of payment, and the month during which delivery is to be made. The only aspect left unspecified is the day of the month in which delivery is to take place. In other forward contracts, the terms differ depending upon the specific needs of the buyer.

Futures contracts are usually traded up to a year in advance, with contracts designated for delivery in specific months throughout the year. For example, a copper futures contract traded on the Commodity Exchange, Inc.(Comex) in New York calls for delivery of 25,000 pounds of 99.9 percent pure copper cathodes. The delivery months are January, March, May, June, July, September, and December. Delivery can be made from any of the six Comex warehouses located across the country. Choice of the warehouse from which shipment will be made and the actual date of shipment within the delivery month are decided by the seller of the contract. While these last two points would seem to work to the disadvantage of the buyer, the market compensates for the uncertainty over delivery.

It is important to emphasize that futures markets are rarely used to make or take delivery of the physical commodity. Confusion over this point was expressed by many attending the Symposium, particularly members of the wastepaper industry. Of the hundreds of thousands of futures contracts traded on U.S. exchanges every year, only one or two percent is satisfied by the seller making delivery and the buyer accepting delivery. More often, a market trader who sells a futures contract will buy a similar offsetting futures contract before the contract reaches maturity (before the delivery month) and thus cancel his position in the market. For example, should a trader sell a May copper futures contract in January, he has two choices to follow with the contract. He can hold it until May, when he is legally bound to deliver 25,000 pounds of copper, or he can, at any time prior to May, buy a May contract. In the latter case, he has both bought and sold a May copper contract and has effectively cancelled any obligation to deliver or purchase copper. Although a futures contract is a legally binding contract to deliver or purchase a commodity at some future date, it does not transfer title to a commodity. This aspect of futures trading must be completely understood. The strict terms of futures contracts do not, generally, represent the most profitable transaction terms for a commercial buyer or seller of the commodity in the cash market.* It is this point as well as the other unique features of futures markets, such as the fact that actual buyers and sellers of futures contracts are unknown to each other, that allow futures trading to supplement, and in some instances, temporarily substitute for the forward trading that occurs in most markets. The commercial trader is usually better off negotiating his own contract in the cash market and using the futures market for other purposes. To view futures markets as delivery markets overlooks these more important functions which are outlined in the next section.

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*Throughout this report, the term "cash market" will refer to transactions that take place in the normal commercial channels and market place. These transactions may involve futurity, such as forward contracts, but are not organized in the sense of futures contracts.

SECTION 4

WHY FUTURES MARKETS?

This section addresses two questions raised in the last chapter: If futures markets are not for delivery what do they do and why would anyone want one? While there are several uses for futures markets, this report focuses on the two most important to commerical traders: risk shifting or risk management, and the financial aspects of futures trading.

PRICE RISK SHIFTING

Futures markets enable commerical buyers and sellers of a commodity to shift the risk of doing business in an uncertain market environment by hedging against unfavorable movements in the price of inputs and outputs. Basically, risk shifting or the hedging function of futures markets involves taking an opposite position in the futures markets from one held in the cash market. A buyer in the cash market who wants to hedge against a price decline would sell in the futures market. If the price of the commodity does decline, he takes a loss in the cash market, but by buying back the futures contract at a lower price than he sold it for, his gains on the futures market transaction offset his losses in the cash market, and he is able to stablize his profit margin and his income.

For a hedge to be successful, the price of the commodity in the cash market must be closely related to the futures price of the commodity for the nearest month of delivery. While this would almost certainly be true for market transactions involving the same commodity as described by the futures contract, it may also be the case for two less clearly related commodities. Buyers and sellers of copper scrap are able to hedge their purchase, sale, or inventory decisions against any of the copper futures contracts traded. As demonstrated in Figure 1, this is because the price of copper scrap moves closely with the price of primary copper which, in turn, is closely related to the futures price of copper.

During the Symposium several references were made to futures markets being price insurance markets. In other words, that by hedging on futures markets a buyer or seller could insure against

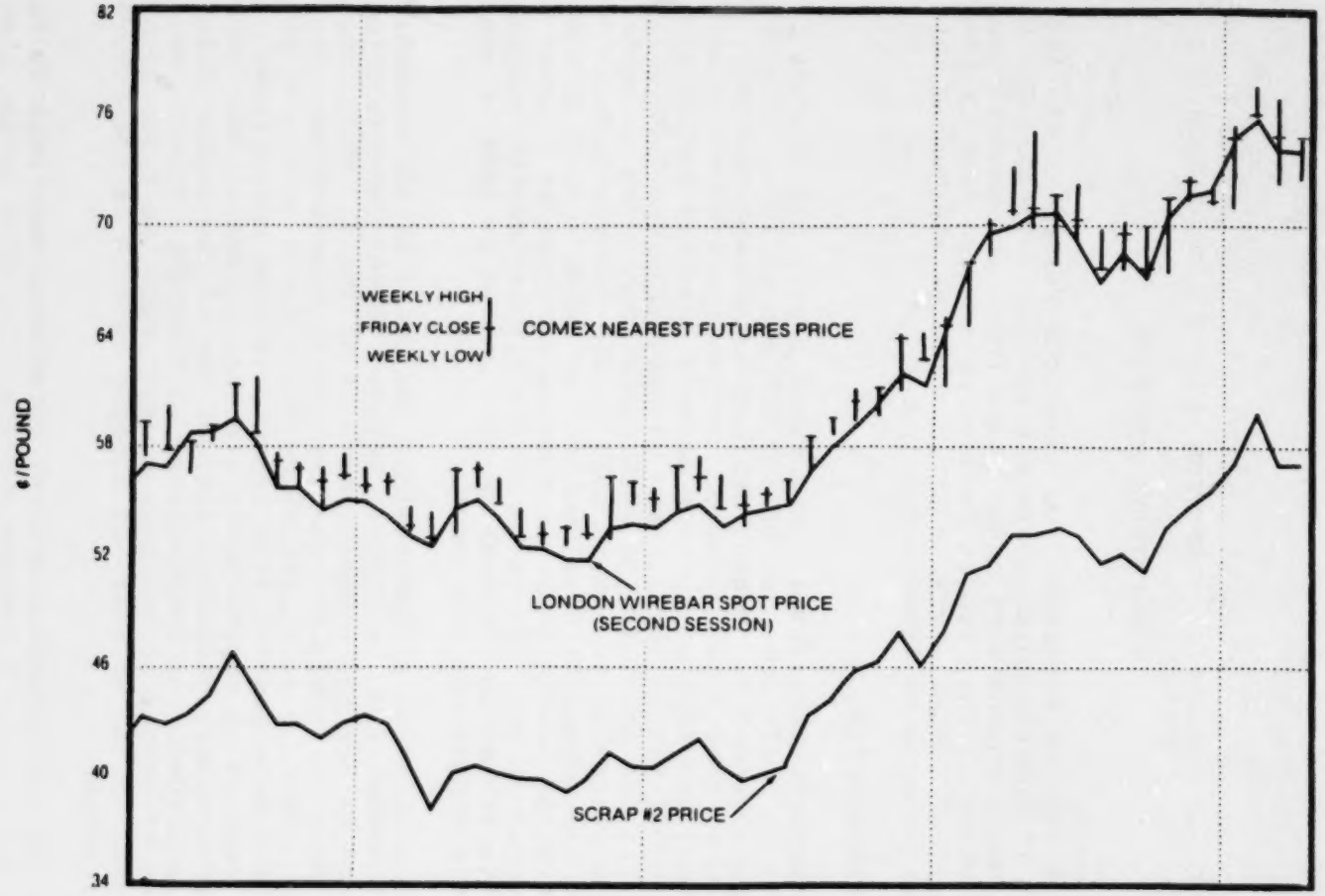

Figure 1. Copper prices: futures, wirebar, and #2 scrap

price changes and therefore, income or profit margin changes. This analogy was described by a commodity exchange official as not being entirely accurate. Hedging on a futures market does not eliminate risk like an insurance market, but rather reduces risk and provides a mechanism for coping or managing risk. Futures prices and cash prices are only rarely perfectly correlated. To the extent that they diverge, a hedger on a futures market is still exposed to some risk.

In futures trading, price risks are shifted. Commerical buyers and sellers shift the risk of unfavorable movements in the cash price for a commodity to other traders in the futures market, particularly speculators, who are willing to accept this risk in hope of financial gain. In Section 4, the extremely important role played by speculators in making a successful futures markets is described in some detail. At this point, suffice it to say that many of the benefits of futures trading to commercial users result from speculators' willingness to accept the price risks shifted to them by hedgers.

FINANCIAL BENEFITS

Futures markets can be thought of as financial institutions and futures contracts as financial instruments. As Professor Hieronymus states in his well regarded book, The Economics of Futures Trading, "It is not a financial institution in the sense of a bank in which money is received from one group of people and loaned to another. Rather, it is a means by which loans made by banks or operating money otherwise secured by businesses are guaranteed against loss." Holding inventories of any commodity, and particularly of scrap commodites, is expensive; if the value of these inventories can be protected from adverse price movements, financing will be more readily available. Futures markets allow commercial traders the opportunity to trade commodity obligations for equity or money obligations. Thus, loans for expansion and other purposes can be acquired at much more favorable terms, if the lending institution knows that its investment is protected from a major price-induced loss.

A simple example of one type of financial benefit from futures trading involves the use of equity capital for financial inventories. Imagine a firm with $1,000 of equity capital to be used to acquire inventory holdings of a commodity. If the firm promises to hedge that inventory, it might be able to obtain a loan rate of 90 percent from a lending institution. This would allow the firm to have $10,000 worth of commodity in inventory. Without hedging, the loan rate might be only 60 percent, which would control only $2,500 of the inventory given the initial $1,000 equity capital.

SECTION 5

HOW FUTURES MARKETS WORK

In order to have even a cursory understanding of the mechanics of futures trading, one must understand the players and the rules of the market. In this section, we introduce the participants in futures markets and describe the structure in which futures trading takes place.

THE PLAYERS

For the purposes of this report, the participants in futures trading are divided into three groups: hedgers; speculators; and the commodity exchange. It should be kept in mind that only for the third group is the definition clear enough to be consistently true.

Hedgers

Hedgers are the commercial participants in futures trading. These traders have, or plan to have, a commodity commitment in the cash market. They are the buyers, sellers, wholesalers and brokers of a commodity. The chances are that they are not trading in futures markets to accept or make delivery of a commodity, but to shift the risk of uncertain future price movements.

Without hedgers, or more properly, without the commerical demand for the hedging services of a futures market, the market is doomed to a short life, if it gets started at all. Evidence indicates that only a handful of futures contracts exist without strong hedging demand. This point was alluded to by a commodity exchange speaker at the Symposium, who identified the extent of industry participation in a futures market as one of the major determinants of a successful contract.

While the importance of hedging demand may seem obvious, it is extremely relevant to consideration of futures trading in ferrous scrap or wastepaper. The 1955 ferrous scrap contract, as mentioned earlier, failed due to a lack of trading interest. While the reasons for this are obscured by the passage of some 25 years, the failure of the market appears closely related to a

lack of hedging interest. The exchange neglected to design a contract that appealed to scrap buyers and sellers or to bring scrap traders into the decision process. Feeling that the futures contract did not conform to their standard industry practices, and that it would not serve a useful purpose, commercial traders shunned the market.

Commerical or industrial participation in futures trading actually has a two pronged impact on trading volume. One, it determines hedging volume and at the same time determines speculative trading interest. As mentioned by one speaker at the Symposium, if adequate hedging demand is established in a futures market, speculative participation usually follows. This aspect of futures trading and the role of the speculator is discussed more fully below.

Speculators

Along with hedging demand, speculative trading provides the other necessary ingredient of a successful futures market. Speculators are traders with no stake in the commerical market for a particular commodity. Ostensibly, they trade solely for the purpose of profiting from favorable movements in the prices of futures contract. If they think prices for a commodity will rise over a particular period of time, speculators will buy futures contracts in hopes of selling them later at a higher price. The role of speculators in futures markets is actually more subtle and far-reaching than this. The misconceptions concerning speculators in futures markets, several questions on which were raised by industry participants in the Symposium, justify an explanation of their part in insuring a well-functioning futures market.

Trading activity on the major commodity exchanges suggests that speculators tend to enter markets in which there is heavy hedging activity. It is in this type of market that speculators find the best opportunity for profits. This also works to the advantage of the hedgers by enabling them to get in and out of the market quickly. Without the trading activity of the speculators, it would be difficult for hedgers to buy and sell when they want to. Speculators willingly accept the price risk the hedgers want to avoid. It was stated earlier that futures markets allow commerical traders to exchange commodity obligations for monetary ones. It is the speculator who provides the monetary obligation. In a sense, the speculator is the financier.

All too often, speculative trading on futures markets is assumed to have a destabilizing effect on prices and to downgrade the integrity of the marketplace. In fact, economic evidence suggests the opposite. By buying when they think prices will rise and selling then they think prices will fall, speculators

help stablize prices. This point of view was defended by several representatives from commodity exchanges at the Symposium. Of course, it cannot be said that speculators, or hedgers for that matter, never try to corner a market or take advantage of a thin (low trading volume) market. However, the incidence of market abuse in futures trading is amazingly low, for trading rules enforced by the exchange allow little opportunity for such behavior.

The Commodity Exchange

In the United States, commodity exchanges are nonprofit organizations formed to serve the needs of their members. Exchanges provide a location for futures trading as well as the rules for that trading. Besides setting the rules of trade and enforcing those rules, exchanges actively engage in research and publication. Membership is open to all individuals of good character and financial soundness. Although, on most large U.S. exchanges, the number of members is limited.

Adjunct to the exchange is the Clearing House, which in most cases is actually a separate corporation. Clearing House members must be members of the exchange, but not all exchange members belong to the Clearing House. The Clearing House is the watch dog of trading activity on the exchange floor, and more importantly, an active participant in the trading process. All trades are made through the Clearing House and one of its members. The Clearing House guarantees all trades and assures openness and honesty of the market. If a seller, for example, were to default on a contract, the Clearing House would be responsible for seeing that the buyer of that contract was satisfied and that the defaulting seller was properly chastized. At the Symposium, exchange officials pointed out that no buyer or seller of a futures contracts in the U.S. has ever suffered monetary loss due to a default.

Admittedly, this is a brief overview of the complex workings of a commodity exchange. We have only highlighted some of the more important functions. One other extremely important function or role of a commodity exchange is presented in Section 6. This involves the choice of commodities made by the exchange for futures trading. This is a decision made solely by the exchange and will have a direct bearing on the feasibility of futures trading in wastepaper and ferrous scrap.

With the participants in futures markets now identified, a few general points are in order. First, the characteristics of the players have been oversimplified. The actual distinction between hedgers and speculators is blurred. Whereas the earlier definition suggests that the primary interest of hedgers is risk shifting rather than speculative gain, very often hedgers have

the same motivation as speculators. Second, for every buyer of a futures contract there is a seller, and for every winner a loser - even though the actual buyers and sellers may not be known to each other. There is no need to; the Clearing House guarantees that a delivery takes place, the terms of the contract will be met. Finally, all the players have significant roles in assuring that the futures markets operate properly and efficiently, and that the markets provide the services for which it is intended.

THE RULES OF THE GAME

Trading in futures markets is a procedure formalized by the commodity exhcange and by law. Futures trading takes place in a specified area of the exchange floor during specific hours of the day. Only members of the exchange may be present on the floor and engage in trading. These members may trade for their own accounts, for the accounts of a brokerage house, or the latter's customers. To insure that all trades are public and competitive, offers to buy and sell must be made by "open outcry", which , because of the loud din on the exchange floor, is normally interpreted to include hand signals as well as shouts. Price moves for a particular contract on any given day are usually limited by the exchange; for example, copper futures are limited to price changes of 3 cents per pound. If the price change in any given day reaches the limit set by the exchange, trading is suspended for the day. Generally, price changes during trade in the current delivery month are not limited. In response to a question at the Symposium on this subject, an exchange representative stated that the price limits are set in response to guidelines from the Commodity Futures Trading Commission (CFTC), the regulatory agency charged with oversight of the futures trading industry, and that the limits were for speculators who would not be aware of large changes in the price of a contract.

Buying and Selling in a Futures Market

To understand futures trading, it is useful to follow, in a simplified fashion, the procedures by which futures contracts are bought and sold. Suppose, for illustrative purposes, that a commodity exchange offers a ferrous scrap futures contract for trading. Assume further that a ferrous scrap dealer or processor has accumulated in inventory a quantity of ferrous scrap similar in quality to the grade of scrap described by the futures contract. He wants to hedge that inventory against the risk of a decrease in the price of scrap. To do this, he could sell a futures contract. After checking the current futures price quotes, contained in most major newspapers, and evaluating all the available market information, he would call his commodi-

ty broker or commission merchant and instruct him to sell one ferrous scrap futures contract in the delivery month that is nearest to the month in which he thinks he will sell his inventory. (He would actually want to sell enough futures contracts to insure that the quantity called for in the futures contracts matched his inventory holdings as closely as possible.

For the broker to execute the trade, the hedge must have a large enough account with the brokerage house to cover the margin requirement for the contract. The margin requirement represents "good faith" or performance money, for which a minimum level is set by the exchange. The brokerage house can set any margin requirement above the minimum. (Generally, it ranges from 5-10 percent of the contract's value.) An interesting distinction was made during the course of the Symposium between the margin requirement on futures contracts and the margins on securities or stocks. Payment of a stock margin gives the buyer title to the stock and, therefore, actual ownership or equity in the entity represented by the stock. Payment of a futures contract margin provides no title of ownership to the particular commodity. This would not happen until the buyer of the futures contract decides to take delivery on the contract and pays the full contract amount. Payment of the margin does give the right to accept delivery or make delivery.

With the financial issues settled, the broker would call his floor representative with instructions to sell one ferrous scrap contract for the delivery month named by the hedger. The floor representative will make his desire to sell a contract known to the other traders in the pit by hand signals or by calling out the order. If another floor trader wants to buy at that price, he responds in kind, and the trade is made. The floor traders have the responsibility to see that the floor observers, exchange employees keeping account of the trading activity, are aware of the price, quantity, and other aspects of the trade. These observers feed the information into a computer system that sends out the results of the trade across the world. The floor traders also fill out time-stamped forms giving the particulars of the trade. These forms are used by the Clearing House to settle the accounts at the end of the day. Finally, the brokerage house is notified of the trade and in turn informs the scrap dealer. The total time elapsed between the floor broker making the trade and the scrap dealer learning the results is only a matter of minutes.

The scrap dealer is now short -has sold- one futures contract. Had he purchased a contract, he would be considered long one contract. At the end of the trading day, the Clearing House reconciles all trades and computes the gains or losses accrued to each trading position. If the futures contract sold by the scrap dealer has risen in price, the dealer will have lost in

that day's trading. To keep his equity at the required level, he may have to increase his account with the brokerage house. Should the price of the contract drop by the end of the day, he will have gained on the transaction, and the difference between the selling price and the closing price will be credited to his account.

The process of taking in and paying out based on changes in the daily price of the futures contract continues until the position is closed out. This is done in one of two ways. During the delivery month, the scrap dealer could decide to deliver under the terms of the contract or, more realistically, he could take an offsetting position in the market by buying a ferrous scrap contract at any time prior to the delivery month. He would take the latter course if he decided to sell his inventory position. A simple call to his broker is all he needs to close out his position with the Clearing House.

The scrap dealer's net gain or loss in holding the inventory of scrap and hedging in the futures market depends on how closely the futures price and the market price followed each other. Any gain or loss, however, will be greater if he does not hedge his cash market transaction. If the market price rises in the period during which he holds the futures contract, he will lose on the futures market but gain on his inventory position. Again, he could have greater revenues had he not hedged, but, on the other hand, he could have taken a loss if the market price fell.

Table 1 provides a numerical example of how a scrap dealer could enter into a selling hedge and protect his inventory holdings. In April, a scrap dealer buys in the cash market a certain quantity of ferrous scrap at $75.00 a ton to be processed and placed into inventory until the Fall. At the same time, he sells a September futures contract for $72.50 a ton. (The difference in the two prices results, in part, from the costs of holding scrap from April to September.) Throughout the summer the price of scrap falls, and in August the dealer decides to sell his inventory. He sells his stocks of processed scrap for the current market price of $73.00, taking a loss of $2.00 per ton in the cash market. Yet he buys back the futures, which has also dropped in price to $70.50, and thereby makes a profit of $2.00 per ton on the futures market. The net loss or gain on the deal is zero. Although a simplistic demonstration - for example, commissions and processing costs are ignored - it does show how one can hedge against unfavorable price movements in the cash market.

TABLE 1. EXAMPLE OF A SELLING HEDGE

Activity	Cash Market	Futures Market
April:		
Buy	$75.00	--
Sell	--	September $72.50
August:		
Buy	--	September $70.50*
Sell	$73.00*	--

* Loss, $2.00; gain, $2.00; net loss, 0.

Throughout the Symposium several other methods of hedging on futures markets were suggested by speakers and participants. One, of interest to consumers of scrap materials, is broadly called a buying hedge and is a means of protecting against rising raw material costs. Suppose that in April an electric furnace operator enters into a contract with a scrap dealer/processor for a certain quantity and quality of ferrous scrap to be delivered to the mill in August at the market price prevailing at that time. In April the market price for the scrap is $75.00 per ton but because the consumer is uncertain what the price will be in August he wants to protect himself from a rise in the price of scrap that would make it unprofitable to use the scrap in his furnance. He could hedge his forward contract in the cash market by buying a futures contract.

Using the hypothetical ferrous scrap futures contract introduced before, the mechanics of the buying hedge are outlined in Table 2. In April the electric furnace operator enters into the cash market contract for delivery in August and buys one September futures contract at $72.50 per ton. (This assumes, of course, that the consumer's cash market contract is covered by one futures contract and that the nearest delivery month to August is September.) The current market price for one ton of ferrous scrap is $75.00. Suppose now that by August the price of ferrous scrap has risen by $2.00 to $77.00 per ton. He is forced to buy the scrap at a loss, relative to the April price, of $2.00. At the same time, the futures price has also risen by $2.00 and he sells his contract for $74.50 and makes $2.00. As in the case of the selling hedge, the furnace operator's net loss on both transactions was zero.

TABLE 2. EXAMPLE OF A BUYING HEDGE

Activity	Cash Market	Futures Market
April:		
Buy	--	September $72.50
Sell	--	--
Market Price	$75.00	--
August:		
Buy	$77.00	--
Sell	--	September $74.50*

* Loss, $2.00; gain, $2.00; net loss, 0.

The procedures for making or taking delivery on a futures market have not been discussed because delivery does not often occur. Suppose, however, that the hypothetical scrap dealer does decide to deliver his scrap inventory to satisfy the futures contract. This question was raised several times at the Symposium and will be addressed below. First, though, it is necessary to introduce a few concepts.

Delivery on a Futures Contract

A futures contract spells out the procedures for delivery: delivery location; shipping mode; payment; etc. The instrument transferring title to the commodity is called a warehouse receipt or shipping certificate, depending on whether the commodity is delivered from inventory or current production, respectively. In the former case, the exchange will either own or have approved the warehouse or location of the inventory from which delivery can take place. Traders wishing to deliver on the futures market must own the commodity at the warehouse. In the latter case, where delivery takes place from current production, only those sellers classed as "regular" for delivery by the exchange can deliver on the market. To insure a standard of quality, the exchange requires a seller to demonstrate financial and moral integrity. The exchange guarantees that the commodity delivered on the market meets the strict requirements of the contract, and in some cases it also conducts inspections to this end. If the contract calls for the use of a shipping

certificate, it will state whether the commodity is to be shipped by rail or truck. In general, the terms of delivery specified in a futures contract will follow the normal delivery and pricing procedures used in the cash market.

To return to the scrap dealer who wants to deliver on his ferrous scrap futures contract: on the first day of the delivery month, the Clearing House notifies him that he must submit the appropriate delivery instrument or take an offsetting position in the market. At any time during that month, the scrap dealer must present a delivery notice to the Clearing House, which in turn passes it on to the contract buyer. Since the original contract sold by the scrap dealer may have changed hands any number of times, the Clearing House simply gives the delivery notice to the contract buyer who has held a buying, or long, position for the longest period. In essence, the delivery notice says to the buyer that the quantity and quality of ferrous scrap called for in the contract is ready and waiting for him. The buyer can, if trading in the contract has not ceased, close his position in the market by selling a ferrous scrap contract for the same delivery month. Or, he can accept delivery by paying the amount specified in his contract to the Clearing House, which then sends the payment to the seller. In most commodity markets for futures trading there is an active secondary market for delivery instruments; the buyer of a futures contract can pay for the delivery instrument and sell it later in the secondary market. Hardly ever does a buyer of a futures contract take delivery on a commodity for which he has no need.

A ferrous scrap contract has been used as an example here. A wastepaper contract could be used by industry members in exactly the same manner. The rules of futures trading vary, in small ways, from exchange to exchange and the uses of these markets differ from commodity to commodity. Nevertheless, the major points presented remain common to all future markets.

SECTION 6

THE BENEFITS OF FUTURES TRADING

Having presented the basic concepts of futures trading in ferrous scrap or wastepaper, the report turns to the last two general areas of concern: if a futures market in either of these commodities was established, how would the futures trading affect the current market for secondary materials; and, what practical considerations are relevant to assessing the possibility of futures trading in wastepaper or ferrous scrap? The last two sections of this report treat these questions in turn.

The effects of futures trading on cash markets for those commodities with no present futures trading are, to some extent, conjectural. The nature and extent of such impacts will be a function of the type of commodity, the structure and performance of the industry, the success of the futures market, the number of commerical traders, and a host of other factors. Nevertheless, several probable impacts were discussed at the Symposium and will be presented here. It is important to restate that futures markets or futures trading does not change market operations or industry practices, rather they supplement these practices.

The provision of a mechanism for risk management or risk shifting is the most obvious and most important result of futures trading. As was stressed by a number of the speakers at the Symposium, this role of futures trading is particularly important for the wastepaper and ferrous scrap markets, which historically have been characterized by volatile prices. The usefulness of a risk-shifting market would be limited if other market mechanisms, such as forward contracting and vertical integration back to sources of raw material suppliers, were extensively used. Indeed, one commodity exchange speaker stated that a criteria for successful futures trading was a forward contracting system that was not operating properly. The consensus of the industry participants at the Symposium was that the current system for forward contracting in the wastepaper and ferrous scrap industries was not strong enough to stablize the market and that a futures market would help buttress this mechanism.

A risk management market would have several indirect impacts on the cash markets for ferrous scrap and wastepaper. One, it

would tend to stabliize producer and consumer revenue by allowing commerical users to assure themselves of fairly constant profit margins. A number of participants at the Symposium questioned this point, saying that they made their money off the highs and lows in the market. They were reminded by an exchange official that you would hedge only when you wanted the protection and stability. Two, because buyers and sellers of scrap could protect their investments that depend in some way on the price of scrap, financing for these investments would be more readily available and probably at more favorable terms. It should be added, that capital tied up in inventories could also be freed for use in other investments.

During the course of the Symposium other potential benefits of futures trading were identified, some of which were a result of risk shifting and others a result of the structure of futures markets. Generally, futures markets would aid in the dissemination of prices and other types of market information and provide for open and competitive price formation. An additional point, mentioned by an exchange representative, was that futures markets can reduce the possibility of contracts going soft. This was explained by the fact that when a forward cash market contract is hedged, there is less incentive or need for one side of the contract to attempt to modify that contract if the market moves in an unfavorable way.

Benefits more specific to the wastepaper and ferrous scrap industries were mentioned by some of the industry speakers. A ferrous scrap dealer/processor argued that a ferrous scrap futures contract could result in steel mills having more consistent participation in the cash market for scrap, steel mills being better able to cope with the world market for scrap, and steel mills having less need for government intervention in export market for scrap. A point on which there was some division of opinion concerned whether a futures market would aid in guaranteeing a constant supply of wastepaper or ferrous scrap to consuming mills (i.e., that a futures market could be used to cope with supply risk as well as price risk). Generally, the mill representatives saw this as a possibility while the dealer/processors did not. It should be remembered that futures markets are not delivery markets, and only occasionally would a consuming mill be in a position to take delivery or want to take delivery.

A strong argument, supported by statistical evidence, can be made that futures trading stabilizes the cash market prices for a commodity. With dissemination of more detailed information on future market conditions, consumption, production, and inventory planning decisions can be made in more organized fashion, thus leading to more stable prices. Whether this would be the case if futures trading were initiated in ferrous scrap or

wastepaper was not answered at the Symposium. However, it should be noted that as long as the demand for wastepaper and ferrous scrap is highly dependent upon swings in the business cycle - which remain relatively difficult to predict - prices for these materials will always fluctuate. Futures trading should, nontheless, remove some of the uncertainty.

As stated earlier, the extent to which the benefits enumerated here would be realized if futures trading in ferrous scrap or wastepaper were initiated is, perforce, somewhat difficult to say. Furthermore, the impact of a scrap futures market on recycling rates is even more uncertain. Although not addressed in a formal way by the Symposium participants, the general consensus appeared to be that while a futures market would help decision makers cope with the uncertain nature of scrap material supply and demand, the existence of other technological and institutional constraints limited any potential increase in the consumption of scrap inputs.

SECTION 7

DESIGNING A SCRAP FUTURES CONTRACT

A significant portion of the Symposium was devoted to discussions on what a futures contract in ferrous scrap or wastepaper would look like and whether such a contract would be successful. Before presenting the details of those discussions, it would be useful to briefly summarize the criteria used by an exchange to determine the feasibility of initiating futures trading in a commodity.

EXCHANGE CRITERIA FOR TRADING

Simply put, an exchange will list any commodity on a futures market that they feel will generate adequate trading volume. While no one industry characteristic will insure a successful market, the presentations and remarks made by the commodity exchange officials participating in the Symposium do provide some guidance to the general industry features that they evaluate to determine the potential for futures trading in a commodity.

o The market for the commodity must be characterized by a sufficient degree of price volatility such that there will be a demand for a market mechanism that limits exposure to the price risk. In other words, there must be a hedging demand for the futures contract. Furthermore, speculators are attracted to markets with highly fluctuating prices.

o There must be an active and competitive cash market for the commodity. The cash market price is a major input into the futures market price. Only rarely, if ever, is a futures market established in the absence of a strong cash market.

o The commodity in question and the cash market for the commodity must be homogeneous enough to allow for determination of a standard trading contract. This would include description of the commodity, size of the contract, delivery procedures, etc. The point here is that if a contract is designed such that it follows accepted industry practices and if a futures contract favors one side of the market over another, trading in that contract may be limited to the favored side.

The remainder of this section will be devoted to a more

thorough analysis of this last criterion. Its importance cannot be overemphasized. This report has stressed the need for commercial demand to insure a successful futures market. Perhaps more than any other criterion, an exchange will look at the potential industry participation in futures trading to determine whether to trade that commodity. The level of hedging demand is heavily influenced by whether or not the futures contract follows industry practices. This is important for two reasons. First, the futures contract must be affected by the same market forces and information that affect the cash price for a commodity. If it is not, the cash price and the futures price would not move together and the futures contract would not be a useful hedging device. Second, the contract must be designed so that industry members will accept it and delivery on the market will occasionally take place.

The last point may seem trivial in light of the fact that futures markets are rarely delivery markets. Yet, while futures markets are not strictly intended as delivery markets, delivery on the markets, or more accurately the possibility of delivery, assures the primary, risk-shifting function of the markets by forcing the futures prices and cash prices together. If, for example, the futures price of a contract in the delivery month was extremely low relative to the current cash price for the commodity, buyers of futures contract would elect to take delivery on the contracts and thus force the futures price up. A poorly designed futures contract, that did not appeal to industry members, would never lead to delivery.

CONTRACT GRADE

There are many grades of wastepaper or ferrous scrap in commercial use. The first, and according to several speakers at the Symposium the most important issue in designing a standard ferrous scrap or wastepaper futures contract, is the choice of a grade of scrap for trading. According to commodity exchange speakers at the Symposium, this grade should account for a large volume of the commerical market transactions in the scrap commodity. Other criteria, mentioned during the course of the Symposium, include a relatively well-defined or homogeneous grade, and that the grade should be easy and inexpensive to inspect. Although a futures contract would probably call for delivery of only one grade, it should be designed so that other grades of scrap can be hedged against it; that is, the price of the futures contract grade should closely correspond to the prices of other grades of the commodity. In essence, the grade of wastepaper or ferrous scrap chosen for futures trading should be one for which at least some buyers of the contracts will want to take delivery and some sellers make delivery.

Several speakers at the Symposium made suggestions as to the appropriate grade for futures trading in ferrous scrap. Two grades of scrap were most often listed: No. 1 Heavy Melting scrap, and Shredded scrap. Other grades such as No. 2 Bundles were felt to be too difficult to inspect and did not constitute a large enough portion of the cash market. Of these, shredded scrap seemed to many to be the best choice. The quality of No.1 Heavy Melting was said to vary from one source to another and thus there would be no way of assuring a constant quality. (One scrap consumer did prefer No. 1 scrap.) Shredded scrap, on the other hand, was said to be easy to inspect and to be relatively uniform across different production sources. At least one speaker did note, though, that while Shredded scrap made up approximately 30% of the export market it made up much less of total domestic consumption and therefore might not generate sufficient trading volume. The 1955 ferrous scrap contract was defined in terms of No. 1 Heavy Melting which some observers say was one of the reasons for its failure.

The discussions on wastepaper were not as specific in terms of possible contract specifications. This was mainly due to the fact that for many of the representatives from wastepaper consuming and supplying firms, the Symposium was their first introduction to the concept of futures trading. The references to a trading grade that were made suggested that a grade of corrugated containers or newsprint would be the best choice. Of the two, one speaker preferred corrugated because more of it is traded in the cash market and it is generated through a more easily influenced system. The bulk of newsprint comes from households, whereas corrugated containers are mostly retrieved from a smaller number of institutional sources.

The choice of the grade of scrap for futures trading will affect the quantity of the commodity called for delivery in the contract. The lot size defined in the futures contract should be comparable to the size of normal cash market shipments of a particular grade. One suggestion for a wastepaper contract called for 50 tons for each contract. For ferrous scrap, the estimates of the most useful contract size ranged from 100 to 200 tons. A model ferrous scrap contract designed in 1976 calls for delivery of 200 tons. The 1955 ferrous scrap contract called for 160 tons of No. 1 Heavy Melting scrap.

PRICING SCHEME

The prices quoted for futures contract should be similar to the pricing system used in the cash market for a commodity. For example, the copper contract traded on Comex is quoted in cents per pound of copper delivered to the Comex warehouse. If a copper futures contract buyer accepted delivery on his futures

contracts, he would have to pay the price called for in the contract, plus the transportation charges from the warehouse to the delivery point. If delivery on the contract comes from current production, prices are normally quoted F.O.B. as some base point.

Very few comments at the Symposium were directed at a specific pricing scheme for wastepaper and ferrous scrap, except that the scheme would have to follow the manner in which these commodities are priced in the cash market. In general, this would be dollars per ton delivered to the consuming mill. The finer points would depend on the specific delivery terms outlined in the contract. An example was provided by one speaker who mentioned that the model 1976 ferrous scrap contract called for price moves in multiples of 25 cents with a price move limit of $10 per day.

There was a significant amount of discussion on an issue closely related to design of a pricing scheme; that is, the impact of transportation costs on the feasibility of a scrap futures contract. The major point was that transportation costs make up a large portion of the price of scrap materials because of the bulky nature of these commodities. The question was raised whether the high ratio of transportation costs to total per ton scrap value relative to other commodites for which there is futures trading would, in some way, work against the success of the market. The Symposium discussion did not generate an entirely clear answer. It does not appear to be a problem, though, since both wastepaper and ferrous scrap are transported and traded through normal commercial channels. The high transportation costs would only serve to limit the distance the scrap would be shipped under futures trading. It would not affect the hedging use of the market. The question of high transportation costs does act to reinforce the need for a futures contract design that mimics standard industry practices.

DELIVERY TERMS

Great concern was expressed by many of the industry representatives at the Symposium over the terms of delivery under a scrap futures contract. Most of the concerns came from scrap consumers who saw futures markets as delivery markets not as risk management markets. We have stated earlier that only a small portion, perhaps 1-2 percent, of all futures contract traded end up with delivery. At the same time, we have also stressed the need for a contract design that facilitates delivery for the few times delivery will take place. Here again, existing delivery practices in the industry are the guide for the definition of delivery terms in a futures contract.

On most futures contracts, delivery is made from inventories, or if inventories of the commodity are not held, from current production. If delivery is made from current production, a shipping certificate is used as the instrument transferring title to the commodity. In essence, it states that a contract lot of the commodity is ready for delivery in a railcar or truck and will be shipped to the buyer. When delivery is made from inventory, a warehouse receipt serves the same purpose. It describes the contract lot and the location of the warehouse or holding area in which the lot is stored.

The implicit consensus at the Symposium was that deliveries of wastepaper and ferrous scrap would be made from warehouses or storage lots. Questions were raised as to where these warehouses would come from. Several answers were provided. One, the market could provide the warehouses. Individuals might see an opportunity for making money by providing the service of warehousing. This is done for several agricultural commodities for which there is futures trading. Two, the exchange could provide warehousing facilities. Three, the exchange could designate a number of existing processing yards as points from which delivery can take place. Only those dealers/processors licensed by the exchange could make delivery on a futures contract.

If the commodity is to be delivered from current production or warehouses, the method of shipment to the buyer must be spelled out in the futures contract. There seemed to be general agreement that for ferrous scrap, transportation would undoubtedly be by rail. One speaker suggested that for wastepaper, the contract could be defined in terms of railcars, (for example, each contract involves one railcar lot of scrap), but delivery could also be made by truck with the same quantity being delivered. This would recognize the fact that most wastepaper is shipped by truck not rail.

To insure that the grade of the commodity called for in the futures contract is actually delivered, the futures contract must specify how the commodity will be inspected for delivery. In cash market scrap transactions, the buyer generally has the right to inspect and reject deliveries if they do not meet his requirements. On a futures markets, since the exchange guarantees all deliveries, the buyer does not have the same inspection prerogatives; he must accept delivery. Of course, if the grade of scrap delivered under the contract was not as described in the contract, the buyer would have recourse through the exchange.

Several Symposium participants expressed the opinion that because of their inability to reject shipments under the futures contract, no buyer would ever take delivery. Since they produce to order, and each different output requires a different grade or quality of scrap input, any uncertainty over the delivery

grade would be detrimental to the success of the contract. While this point was debated back and forth at the Symposium there are ways for a commodity exchange to minimize the uncertainty. One, as mentioned before, the exchange should choose a grade of scrap that is as clean as possible and have a great deal of buyer confidence. Two, the contract could call for inspection of the commodity at the point of shipment, be that a warehouse or a scrap dealer's yard, by an independent third party. Three, only those scrap dealers with a sound reputation in the market, or those who post a bond guarantee, could be allowed to deliver on the futures market. The first and the last points would inevitably be taken into consideration by an exchange. The second point did not receive great support for those attending the Symposium and is probably not feasible.

While there are finer points to be resolved in outlining the inspection procedures and other features for a scrap futures contract, it should be noted that most commodity markets are characterized by long-term relationships between buyers and sellers. Raw materials users tend to deal with trusted suppliers. In this sense, the markets for scrap materials are no different. Futures markets do not impinge upon this process. If a scrap futures contract buyer cannot use the specified contract grade in his production processes, he does not need to take delivery, but he can still use the market for hedging purposes.

As an alternative to the delivery requirements reviewed here, one commodity exchange official introduced a concept that would greatly ease the design of a scrap futures contract. The idea involves settlement of a futures by cash transfers rather than physical delivery. The idea would require that all contracts are settled at some relation to the cash price for a commodity. While the cash settlement concept would eliminate the need for specification of a contract grade and delivery procedures in a futures contract, a well developed cash market for the commodity where prices are known must be present. If one of the benefits of a futures market, price discovery, is already being provided by the cash market, then a futures contract based on cash settlement might be feasible. If this were the case, the futures markets would be a purely hedging market. It is unclear whether cash settlements could be applied to wastepaper or ferrous scrap futures contracts. Doubts were expressed whether the cash markets for ferrous scrap or wastepaper fit the requirements noted above. Furthermore, the cash settlement concept still must be approved by the Commodity Futures Trading Commission, although modified forms of cash settlement are used in some current futures contracts.

CONCLUSIONS

Of all the points discussed in this section, the ability to define a standard grade for trading seems to be the most crucial as far as initiating a successful futures contract in wastepaper and ferrous scrap is concerned. However, while several speakers addressed this subject and reviewed the weaknesses of the current specifications for futures trading, most parties agreed that a grade of wastepaper or ferrous scrap could be defined for futures trading with little adjustment to current practices. The guidelines suggested by industry participants were that the grade must be specified with enough flexibility so that scrap dealers and processors could meet delivery requirements and stringent enough that at least some scrap consumers would take delivery. As a general rule, this applies to all of the contract design considerations raised here.

APPENDIX

SCRAP FUTURES SYMPOSIUM PARTICIPANTS

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